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THE PRESERVATION AND SHIPMENT OF DEAD INSECTS FOR DETERMINATION

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## THE PRESERVATION AND SHIPMENT OF DEAD INSECTS FOR DETERMINATION

## 1. Preserved in liquid

Specimens of the following groups should be preserved in alcohol:

Anoplura (sucking lice)	Isoptera (termites or white ants)
Coleoptera (beetles)	Mallophaga (bird lice or biting lice)
Diptera (only minute forms such as midges and fungus gnats - never mosquitoes) see item 2.	Siphonaptera (fleas)
Hemiptera (true bugs) (may be submitted in alcohol). If submitted dry, see instructions item 2, page 2.	*Thysanoptera (thrips)
Homoptera (leafhoppers, aphids, etc.) see also item 2.	Collembola (springtails)
Hymenoptera (ants, gall wasps and parasites only) see also item 2.	Psocoptera (Corrodentia) (psocids or booklice)
	Dermaptera (earwigs)
	Embioptera (embiids)
	Ephemeroptera (mayflies)
	Plecoptera (stone flies)
	Thysanura (silverfish)
	Zoraptera

including the immature stages of all orders; also, other arthropods such as centipedes, millipeds, mites, spiders, ticks, etc.

\*While thrips preserved in 75 percent grain or rubbing alcohol are usable, better study material results if thrips are preserved in a fluid consisting of 8 parts 95 percent alcohol, 5 parts distilled water, 1 part glycerine, and 1 part glacial acetic acid (AGA).

## PLEASE FOLLOW THESE IMPORTANT INSTRUCTIONS:

- a. 70-75 percent grain alcohol is the best general liquid preservative and should always be used unless some other preservative is especially requested. The use of 95 percent alcohol is to be avoided because it tends to harden the specimens. NOTE. Rubbing alcohol is acceptable.
- b. Larvae should be killed in very hot or boiling water and allowed to remain in the water from one to five minutes according to size, before being transferred to alcohol.
- c. Whenever practicable, sort to species or obvious kinds, and send only one species or kind in a vial.
- d. Delicate insects break up when they slosh around in a vial partly filled with preservative. Potential damage can be avoided if the specimens are confined to the bottom of the vial, but not squashed, by a plug of paper tissue that is tight enough so it doesn't move during transportation of the vial. Be sure the cork or screw cap is tight so preservative will not leak out. Scotch tape is not needed nor recommended for a properly closed vial.
- e. Plant materials should be placed in separate vials and not combined in a vial containing insects, since the latter are easily damaged if the plant specimen disintegrates en route.

## 2. Preserved dry

Adult specimens of the following groups should be preserved dry; preferably mounted.

Diptera (flies and mosquitoes) (except certain minute forms such as midges, and fungus gnats). See also item 1	Hymenoptera (bees, and wasps and sawflies) see also item 1
Hemiptera (true bugs) (may be sub- mitted dry only if pinned or on points. Do not put in pill boxes). See also item 1, page 1	Lepidoptera (moths and butterflies)
Homoptera (scale insects on host material, and whiteflies)	Mecoptera (scorpionflies)
	Neuroptera (lacewings, dobsonflies, ant lions, etc.)
	Odonata (dragonflies and damselflies)
	Orthoptera (grasshoppers, cockroaches, etc.)
	Trichoptera (caddisflies)

PLEASE FOLLOW THESE IMPORTANT INSTRUCTIONS:

- a. Most insects that are to be preserved dry should be killed in cyanide jars. Some entomologists prefer other killing agents, particularly ethyl acetate.
  - b. Material to be shipped dry and unmounted should be placed in pill boxes between layers of cellucotton or tissue tightly enough so that specimens will not move about, but not pressed down enough to rub, flatten, or distort the specimens. Cotton should never be used, as appendages catch in the fibers and are apt to be broken off.
  - c. Specimens should be placed in pill boxes while they are still limber. If for any reason the insects become dry and brittle, they should be partially relaxed in a moist chamber before packing.
  - d. Lepidoptera should be handled as infrequently as possible. Medium and small sized moths and butterflies should be packed one specimen to a layer of cellucotton.
  - e. Do not put naphthalene or paradichlorobenzene in the pill boxes where it will come in contact with specimens.
  - f. Bulky insects, or pieces of host plants bearing insects such as Coccidae or Aleyrodidae should be partially or fully dried out before being placed in a container, or packed in a container which will permit desiccation to continue after closure. Repeatedly taxonomists have received fleshy parts of plants, presumably infested with scale insects, which had molded badly or completely decayed by the time they were received, merely because they were too wet when they were packed.
  - g. If any insects are reared, they should be held alive until their wings have expanded and hardened, and the full body and wing colors are attained.
  - h. Pinning or pointing adult insects in the field is recognized as the most desirable method of obtaining perfect specimens. This should be done whenever time and facilities permit. One or two mounted specimens of a small insect can be satisfactorily pinned into the cork and placed inside of a shell vial.
3. Use of Form PPC 3-9 and Form PPC 3-9A, Specimens for Determination

These forms are preferred for recording the necessary data on collections and to distinguish between collections submitted by certain Federal Agencies and those submitted by other collectors. If these forms are not available the same information should be included in a transmittal letter or on a separate piece of paper.

With few exceptions (known to those people who are concerned) the white Form PPC 3-9 is used by Federal workers. The form printed on green paper, PPC 3-9A is used by all other cooperators.

These forms are available in pads of 20 sets each and they may be obtained from the Plant Pest Control Supervisor in Charge in any State, from the Regional PPC Offices in Gulfport, Mississippi, Minneapolis, Minnesota, Morrestown, New Jersey or Oakland, California, or direct from the Plant Pest Control Division, Federal Center Building, Hyattsville, Maryland, 20781.

All specimens submitted should be accompanied by accurate and complete information, preferably on Forms PPC 3-9 or 3-9A, Specimens for Determination. (See illustration at the end of this instruction sheet for guidance.) All items, such as Collection Number, State, County, etc., should be printed or legibly filled in. Use sufficient pressure when writing to insure legible carbon copies. Do not use the open box at the bottom of the form which is reserved for the taxonomist. Any notes or small maps should be on the back of the form.

Collection numbers are very important. A dependable system that avoids errors and can be easily traced, utilizes the collector's initials, consecutive collection numbers, and the year; namely, John J. Doe - JJD-1-64, JJD-2-64, etc. The individual collector must exercise caution and not duplicate the numbers. Never start over within the calendar year, but continue with the consecutive numbers though moving to another township, county, or State. A new start should be made only at the beginning of each calendar year.

Five forms or a complete manifold set should be prepared for each collection. After preparation, remove 4 green copies for transmittal with the specimens; remove the extra carbon on the back, but do not remove any interleaved carbons.

Do not tear the tab from the bottom of the set, as this will release the interleaved carbons. The yellow copy should remain in the book for collector's reference.

When specimens are known to represent various stages of a single species, this should be indicated on the data sheet.

Because many insects habitually rest on plant species other than those which serve as their food, the "HOST" section should indicate whether the insects were merely "resting," "found on," etc., or whether they were obviously using the plant for a food source. Many identifications are aided or confirmed by accurate host information, and some are not possible without it. The part of the plant on which the insect was found should always be indicated, especially for immature forms.

After the identification is finished, the Beltsville office will return a completed copy of the form to the collector. Separate procedures are followed when various Federal agencies submit specimens.

#### 4. Shipment of Insects in Vials

- a. Vials should be well packed in mailing tubes. Unless absolutely necessary, the PPC form, "Specimens for Determination" should not be wrapped or rolled around the vial and held by rubber bands. Such procedure results in considerable lost time on the part of preparators. The determination slips should be loosely rolled and placed in the mailing tube first, the vials then packed in the center.

- b. Of equal importance is the need to properly cross identify vials and collection slips. The safest procedure is to record the collection number and important collection data on a small slip of paper and place it in the vial. This procedure correctly links the PPC form with the proper vial in case they become separated at some point along the way. The slip in the vial containing the collection number should be as small as practicable to use in the field in order to avoid damage to fragile specimens. CAUTION: The ink in many ball point pens, and some other inks are soluble in preservatives and thus are useless to mark the slips that go into the vials. A good medium grade lead pencil is most satisfactory. If there is reason to direct a letter to the insect identification office at Beltsville, regarding a collection, please refer to the collection number so the two items can be brought together.

## 5. Shipment of Mounted Insects

- a. Only boxes with the bottom securely lined with cork or some other appropriate material should be used. Pins should be set firmly in the cork. If the specimen is heavy, or if the pin carries some other heavy object such as a microvial, additional pins should be firmly set on each side, both to prevent the specimen from spinning on its pin, and to prevent the pin from coming out of the cork. Never put a vial of material in a box of pinned specimens. Heavy specimens or other objects that come loose in transit can break and ruin all the specimens in a box.
- b. The shipping carton for a box of specimens should provide adequate space, minimum of two inches, on every side for the inclusion of shock-absorbing material such as excelsior, or shredded or crumpled paper. The box containing specimens should never be wrapped and mailed without this protection.
- c. Specimens mounted on microscope slides should be shipped only after the slides are thoroughly dry. Slides are best shipped in standard slide containers with a layer of cotton or cellucotton on top to hold them in place. If slide containers are not available, each slide should be wrapped in soft paper so as to avoid crushing the specimen or dislodging the cover glass.

## 6. Emergency Priority - Mailing

Occasionally, if circumstance warrants, submissions may be marked RUSH on the mailing label and at the top of the PPC 3-9 or 3-9A forms, and they will be given priority; also, wire replies, if requested, will be made under the same conditions.

Specimens should not be forwarded to Beltsville if adequate determinations can be made in the field. This policy reduces the workload on the limited number of Federal taxonomists.

Unless specific handling instructions prevail, all specimens should be addressed to:

Chief, Insect Identification & Parasite Introduction Research  
Branch  
Entomology Research Division  
Beltsville, Maryland

Survey and Detection Operations  
PPC - ARS - U.S.D.A.  
Revised May 1964

## INSTRUCTIONS FOR USE OF PPC FORM 3-9A

FORM APPROVED BUDGET BUREAU NO. 40-R3121	
U. S. DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH SERVICE	
PLANT PEST SURVEY & DETECTION FEDERAL, STATE & PRIVATE AGENCIES COOPERATING SPECIMENS FOR DETERMINATION	
1. SUBMITTING AGENCY <input type="checkbox"/> FEDERAL <input checked="" type="checkbox"/> STATE <input type="checkbox"/> OTHER (Specify)	
2A. COLLECTION NO. JJD-1-59	2B. COLLECTION DATE 6/11/59
2C. STATE Virginia	2D. COUNTY Fairfax
2E. CITY Centerville	2F. TYPE OF PROPERTY
2G. NAME & ADDRESS OF PROPERTY Smith Nursery Rt. 1 Centerville	
3. DEGREE OF INFESTATION <input checked="" type="checkbox"/> LIGHT <input type="checkbox"/> MEDIUM <input type="checkbox"/> HEAVY <input type="checkbox"/> OTHER (Specify)	
4. HOST(S) Hawthorne	
5. LOCATION ON PREMISES	
6. STAGE <input type="checkbox"/> EGG <input type="checkbox"/> LARVA <input checked="" type="checkbox"/> ADULT	
7. CONDITION <input checked="" type="checkbox"/> LIVE <input type="checkbox"/> DEAD	
8. COLLECTOR John J. Dingle	
9. REFERRED BY (Name & address) R. J. Jones	
P.O. Box 29, Richmond, Va.	
10. FOR USE OF TAXONOMISTS (DETERMINATION & NOTES)	
PPC FORM 3-9A FEB. 1960	
☆ U. S. GOVERNMENT PRINTING OFFICE: 1960-849871	

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Retain yellow copy

Remove only last carbon

## INSTRUCTIONS

## FOR USE OF PPC FORM 3-9A

1. DO NOT SHIP LIVE SPECIMENS  
Special instructions for preserving, packing, and shipping specimens are available, if needed.
2. Write legibly — use ball point pen or medium hard pencil.
3. Furnish complete information for each entry.
4. Remove the 4 green copies intact, including stub and carbons, for transmittal with specimens (Remove the extra carbon on back.) Retain yellow copy.

## DO NOT WRITE IN ITEM 10.

5. Items 2A — 2G  
These items relate to the location and type of property from which specimens are taken.
6. Item 2A. Assign number for each collection.  
Example: for John J. Doe      JJD-1-59  
   JJD-2-59  
  
Start with new series of numbers each calendar year.  
  
Make certain that corresponding number is placed on slip of paper in vial with specimens. Use only lead pencil. Some inks dissolve in the preservatives.
7. Item 2F.  
Indicate farm, feed mill, nursery, etc.

DO NOT REMOVE THIS TAB





